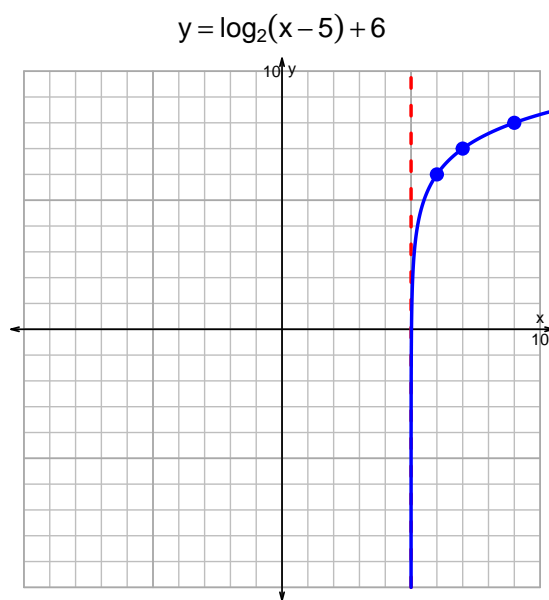
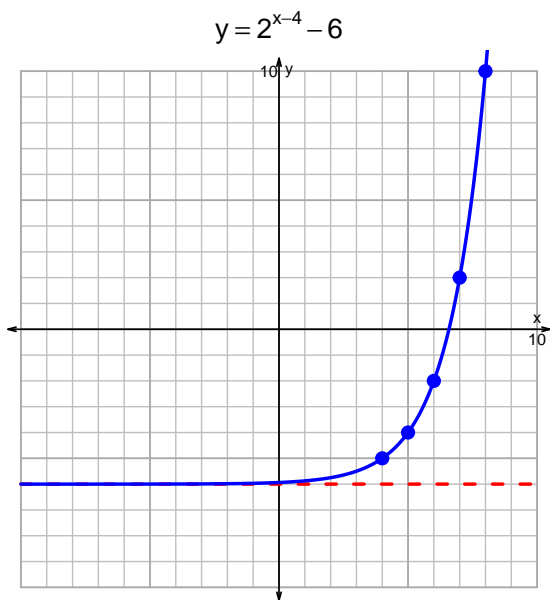


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## s18: EXP LOG (SLTN v330)

1. (10 pts) Graph  $y = 2^{x-4} - 6$  and  $y = \log_2(x - 5) + 6$  on the grids below. Also, draw any asymptotes with dashed lines.



*Somewhat useful hint:  $2^3 = 8$ , and thus  $\log_2(8) = 3$ .*

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-23 = \left(\frac{-5}{3}\right) \cdot 10^{4t/7}$$

Divide both sides by  $\frac{-5}{3}$ .

$$\frac{23 \cdot 3}{5} = 10^{4t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{23 \cdot 3}{5}\right) = \frac{4t}{7}$$

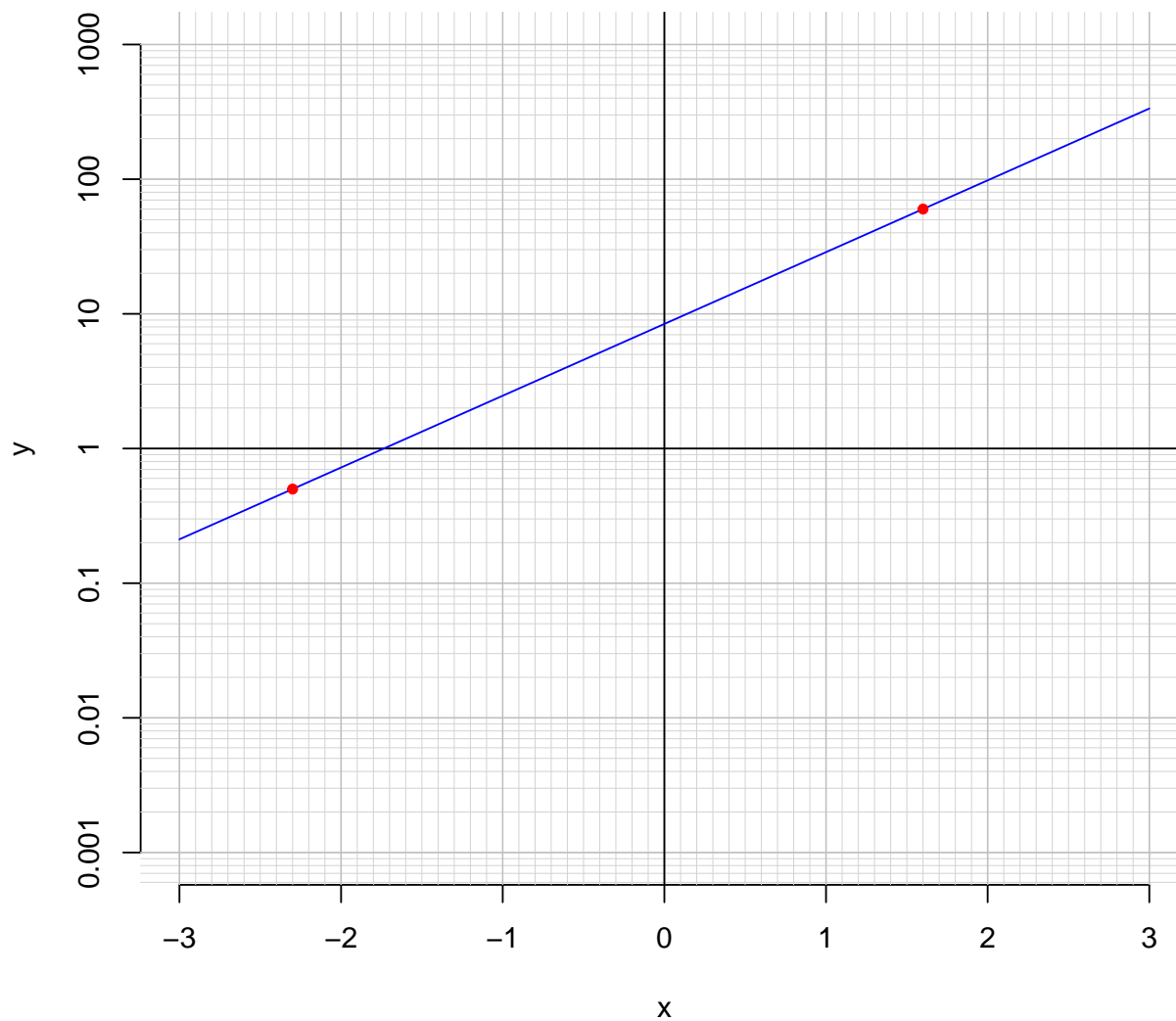
Divide both sides by  $\frac{4}{7}$ .

$$\frac{7}{4} \cdot \log_{10}\left(\frac{23 \cdot 3}{5}\right) = t$$

Switch sides.

$$t = \frac{7}{4} \cdot \log_{10}\left(\frac{23 \cdot 3}{5}\right)$$

3. (10 pts) An exponential function  $f(x) = 8.42 \cdot e^{1.23x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(1.6)$ .

$$f(1.6) = 60$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{1.23} \cdot \ln\left(\frac{x}{8.42}\right)$$

Using the plot above, evaluate  $f^{-1}(0.5)$ .

$$f^{-1}(0.5) = -2.3$$